Section 1 - Purpose and Need

1.1 Description of Proposed Action

In accordance with the National Environmental Policy Act (NEPA) regulations codified in 40 CFR 1502.13, the Purpose and Need section "…briefly specifies the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action."

The Utah Department of Transportation (UDOT) and the Federal Highway Administration (FHWA) have prepared this Final Environmental Impact Statement (FEIS) and Final Section 4(f) Evaluation to address proposed improvements to the transportation network in the southern Salt Lake Valley. Current as well as future traffic congestion has been identified as an issue in the area bounded by 10400/10600 South on the north, 700 East on the east, 12300/12600 South on the south, and Bangerter Highway on the west (Figure 1-1). This area is referred to in this document as the 11400 South "study area."

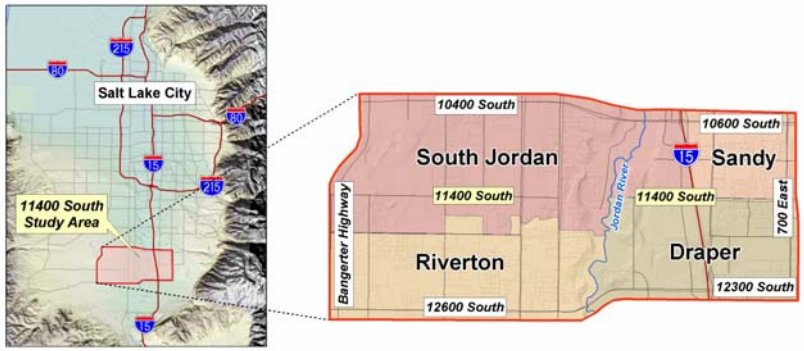


Figure 1-1. Study Area in Relation to Salt Lake Valley

Five transportation alternatives, including the No Build Alternative, were advanced and are evaluated in this FEIS. These alternatives are discussed in Section 2. The Build Alternatives include various combinations of the following actions: making improvements to existing roadways at 10400/10600 South, 11400 South, and/or 12300/12600 South; constructing a new bridge and connecting the 11400 South roadway over the Jordan River; and constructing a new freeway interchange at 11400 South and I-15.

Following is a brief history of the project and a description of the purpose and need for a transportation solution.

1.2 History

UDOT's Statewide Transportation Improvement Program (STIP) is a 5-year program of highway and transit projects identified in the state of Utah. The STIP is published each year and is a compilation of projects using various federal and state funding programs and includes transportation projects on the state, city, and county highway systems. The STIP serves two purposes:

- It establishes Utah's compliance with the requirements of the Transportation Equity Act for the 21st Century (TEA-21) and is the basis for approval of federal aid highway and transit funds by FHWA and the Federal Transit Administration (FTA).
- It is UDOT's official work plan for the development of projects, from concept development, environmental studies, right-of-way (ROW) acquisition, and plan development through advertisement of a construction project.

The Wasatch Front Regional Council (WFRC) is the Metropolitan Planning Organization responsible for transportation planning for the Salt Lake and Ogden urbanized areas. As required by federal regulations, WFRC develops a Long Range Transportation Plan, which is updated every 3 years. The plan was last updated in 2003. A Long Range Plan (LRP) is a financially constrained

transportation plan, with at least a 20-year time frame, of anticipated highway and transit needs in a specific area. WFRC's LRP typically includes the projects listed in the STIP and is coordinated with FHWA, UDOT, and the Utah Transit Authority (UTA). Transportation needs are based on projected and planned socioeconomic and land use growth within a region. The projects identified in the LRP are used in the regional transportation demand model developed by WFRC.

Listed below and shown on Figure 1-2 are projects either within the study area or nearby that are included in the WRFC 2030 LRP, followed by the phase in which they are scheduled to be completed. In accordance with the Transportation Equity Act (TEA-21), the LRP includes only those highway and transit facility improvement projects that can be funded over the next 27 years. Phase 1 improvements are scheduled to occur between 2004 and 2012, Phase 2 improvements are scheduled between 2013 and 2022, and Phase 3 improvements are scheduled between 2023 and 2030.

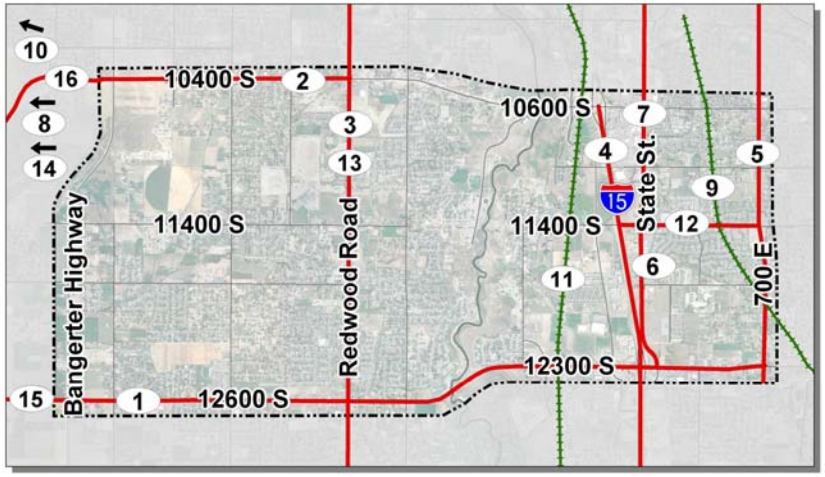


Figure 1-2. Study Area and Current Transportation Projects and Studies

1. Widen 12300/12600 South to four lanes* from Bangerter Highway to 700 East (LRP Phase 1 – construction complete).
2. Widen 10400 South to four lanes* from Bangerter Highway to Redwood Road (LRP Phase 1).
3. Widen Redwood Road to four lanes* from Bangerter Highway to 10400 South (LRP Phase 1).
4. Widen I-15 to 10 lanes from 10600 South to the Alpine Exit (LRP Phase 1 through Phase 3 – construction complete from 10600 South to Point of the Mountain).
5. Widen 700 East to four lanes* from 12300 South to 9400 South (LRP Phase 1).
6. Widen State Street to four lanes* from 11400 South to 12300 South (LRP Phase 1).
7. Widen State Street to six lanes* from 7200 South to 11400 South (LRP Phase 1).
8. Develop Mountain View Corridor transportation route (LRP Phase 1 through Phase 3).
9. Construct Draper light rail extension (LRP Phase 2).
10. Construct Mid-Jordan light rail extension (LRP Phase 1).
11. Construct Commuter rail line from Utah County to Weber County (LRP Phase 1).
12. Widen 11400 South to four lanes* from I-15 to 700 East (LRP Phase 1).
13. Develop Redwood Road Bus Rapid Transit (BRT) line from 14400 South to 8000 South (LRP Phase 2).
14. Develop Mountain View BRT line from 13400 South to 4700 South (LRP Phase 2).
15. Widen 12600 South to four lanes* from Bangerter Highway to SR-111 (LRP Phase 3).
16. Widen 10400 South to four lanes* from Bangerter Highway to SR-111 (LRP Phase 2)

*Plus an additional center turn lane or median.

In addition to the projects listed above, the LRP also includes additional improvements to the 11400 South corridor within the project study area. The WFRC first identified the 11400 South corridor as an important regional corridor in 1987. The cities of Draper, Sandy, and South Jordan included a proposed I-15 freeway interchange at 11400 South and additional 11400 South corridor improvements in their city Transportation Master Plans in 1996 and 1997. In 1998 the project was placed on the WFRC LRP and the STIP as a needed project. The project is included in the current WFRC 2030 LRP.

Pursuant to NEPA (42 U.S.C. 4321 et seq.), FHWA with assistance from UDOT completed an Environmental Assessment (EA) in 2000 for the 11400 South Interchange and Roadway Improvements Project (Project # SP-15-7(156)293). The project consisted of a new interchange at 11400 South and I-15, an east-west roadway connection of 11400 South across the Jordan River, and widening of 11400 South from 1300 West to Bangerter Highway. Based on the EA, FHWA issued a Finding of No Significant Impact (FONSI), which allowed the interchange and roadway improvements project to proceed. A separate 4(f) evaluation was completed as required by 49 U.S.C. § 303.

Legal action to enjoin the project was filed in Utah's U.S. District Court. In 2001, the U.S. District Court denied the plaintiffs' motion for a preliminary injunction [Davis v. Slater, 148 F. Supp. 2d 1195 (D. Utah 2001)]. The decision was appealed to the 10th Circuit Court of Appeals. During this appeal, the scope of the transportation needs in the project area changed and therefore UDOT, in consultation with FHWA, decided to withdraw the EA's FONSI and prepare an Environmental Impact Statement for a larger project. Mobilization for project construction had started prior to the official approval by FHWA to withdraw the FONSI. The official approval by FHWA to withdraw the FONSI came the morning of the day the 10th Circuit Court of Appeals issued its decision – although the request by UDOT for FHWA to take this action came weeks before.

Notwithstanding FHWA's withdrawal of the FONSI such that there was no longer a valid project, the 10th Circuit Court of Appeals ruled against FHWA and identified the following deficiencies in the environmental document: (1) the consideration of alternatives was inadequate; (2) impacts, including cumulative impacts, were not considered adequately; (3) issues related to phasing of the project were not adequately addressed; (4) the Section 4(f) analysis (required by Section 4(f) of the U.S. Department of Transportation Act of 1966) failed to satisfy the high burden imposed on projects that make use of a public park and/or historic sites; and (5) the environmental document analysis was fatally flawed by its use of vague, unsupported conclusions and inadequate, incomplete analysis. Davis v. Mineta, 302 F.3d 1104 (10th Cir. 2002).

In the EIS for the new project, UDOT and FHWA agreed to address these deficiencies, including a more detailed study of the transportation issues and alternatives in an area wider than just the 11400 South corridor. UDOT and FHWA also prepared a new Section 4(f) Evaluation, which is included in this FEIS. Specifically, the FEIS/Section 4(f) Evaluation:

(1) considers 12 initial alternatives in an expanded study area which were screened down to five alternatives advanced for detailed analysis;

(2) thoroughly addresses direct, indirect, and cumulative impacts from the five alternatives advanced for detailed analysis;

(3) identifies mobility, community, and environmental impacts related to construction phasing of the advanced alternatives;

(4) identifies all potentially impacted Section 4(f) resources within the study area, potential impacts to and uses of those resources from each advanced alternative, and measures to avoid, minimize, or mitigate those impacts, and identifies as the Preferred Alternative the alternative with the least overall net harm to Section 4(f) resources; and

(5) provides detailed, comprehensive analysis and conclusions, with supporting documentation included in the FEIS appendices and administrative record.

The expanded study area for this FEIS includes portions of Sandy, Draper, Riverton, and South Jordan cities (Figure 1-2). I-15 runs north-south through the study area. The study area boundaries were selected to address the purpose and need, and to allow a range of reasonable alternatives, in accordance with NEPA.

10400/10600 South and 12300/12600 South were selected as the northern and southern boundaries because these are the closest major east-west arterials to the 11400 South area, and because they provide the nearest crossings of the Jordan River within the study area. Projects farther north of 10600 South and south of 12300 South would not address mobility problems in the area. A 9800 South Traffic Analysis conducted in 2000 (Fehr & Peers, October 2000), which assumed that a river crossing would be constructed at 11400 South in the near future, concluded that a river crossing at 9800 South was also necessary to meet the projected travel needs in the area. The 9800 South bridge was constructed in 2002. All traffic measurements and modeling conducted for this 11400 South FEIS accounted for the new 9800 South river crossing.

Bangerter Highway was selected as the western boundary of the study area. Regional transportation issues west of Bangerter Highway are currently being assessed as part of the Mountain View Corridor DEIS. Coordination with the Mountain View Corridor project occurred throughout the EIS process, including coordination of traffic study results and cumulative impacts analyses. 700 East was included as the eastern boundary so that the traffic analysis of I-15 and the area just east of I-15 would be included in the study, since traffic on and around I-15 contributes to mobility problems in the study area.

The study area boundaries were also selected in accordance with FHWA guidelines for selecting “logical termini” for project limits. FHWA requires that logical termini be selected so that environmental issues can be treated on a sufficiently broad scope to ensure that the project will function properly without requiring additional improvements elsewhere, and so that the project will not restrict consideration of alternatives for other reasonably foreseeable transportation improvements. The logical termini for this project meet these three FHWA requirements.

1.3 Need for the Proposed Action

The southern Salt Lake Valley is one of the fastest growing areas in the state of Utah. The project study area includes portions of Draper, Riverton, Sandy, and South Jordan cities. Total population within these four cities is expected to increase by 90 percent by the year 2030 over 2000 population numbers (Utah Governor’s Office of Planning and Budget 2003).

In developing their transportation Long Range Plans, both the WFRC and UDOT consider the city master plans. The city leaders determine what growth is desired and plan the commercial and residential development for their municipalities. Then WFRC and UDOT plan for transportation infrastructure needed to support future development by the cities.

Maintaining the current quality of life is important to the cities and the residents within the study area. This quality of life includes

neighborhood-style communities in which residents live in rural and suburban neighborhoods, have access to family recreation such as parks and trails, and have convenient access to work, services, and stores.

Community quality of life includes objective measures such as public safety, community economic vitality, and access to employment and income opportunities, as well as subjective measures such as community values, levels of satisfaction with community conditions, and attachment to the community. Many of these measures are interrelated. In order for these objective measures and many of the subjective measures to be met, the necessary tax base to support economic development is needed to provide services to city residents.

In order to maintain, protect, and improve the quality of life, now and into the future, residents and officials of the cities within the study area have identified the need for both mobility improvements and economic development, as discussed further below. Neighborhood cohesion, which is also an important component of quality of life, may be positively or negatively impacted by some of the development required to meet the needs of the study area. These impacts were analyzed and are discussed in Section 4.3. Mitigation measures are incorporated where appropriate.

1. Mobility within the study area needs to be improved.

A traffic analysis of current conditions within the study area was conducted and modeling of future traffic conditions through 2030 was completed. These studies, summarized in Appendix A, show that there are three major intersections and two interchanges within the study area that currently operate at or over capacity during the afternoon rush hour (4:00 pm to 6:00 pm) and one interchange that operates at or over capacity during both the morning (7:00 am to 9:00 am) and afternoon rush hours. By 2030, ten major intersections and two interchanges within the study area are expected to be at or over capacity during morning and/or afternoon rush hours. This congestion is expected to cause difficulties and delays in commuting to work and traveling to local destinations, as well as reductions in emergency service response times, all resulting in adverse impacts to quality of life.

2. Economic development within the study area needs to continue in order for cities to maintain the quality of life their residents desire.

According to the four cities within the study area (Draper, Riverton, Sandy, and South Jordan), continued economic development, both business and residential, is necessary to provide additional employment, housing, and adequate access to goods and services for current and future residents within the study area and is vital to the future success of their cities (see the Economic Analysis report included in Appendix F). In addition, the increased sales tax revenue is needed to allow cities to continue providing the necessary public services and quality of life enhancements to the growing residential population. To successfully support economic growth, regional access and mobility needs to be improved.

1.4 Purpose of the Project

The purpose of the project is to maintain, protect, and improve the quality of life in the study area by improving mobility and providing transportation infrastructure to support economic development within the study area through the year 2030. Improving mobility and providing transportation infrastructure to support economic development are consistent with both federal and state requirements.

Per the Transportation Equity Act of 1998 (TEA-21), §135(c)(1):

"Each State shall carry out a transportation planning process that provides for consideration of projects and strategies that will:

(A) support the economic vitality of the United States, the States, and metropolitan areas, especially by enabling global competitiveness, productivity, and efficiency;

(B) increase the safety and security of the transportation system for motorized and nonmotorized users;

(C) increase the accessibility and mobility options available to people and freight;

(D) protect and enhanced the environment, promote energy conservation, and improve quality of life;

(E) enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;

(F) promote efficient system management and operation; and

(G) emphasize the preservation of the existing transportation system."

In addition, per Utah Code Section 72-1-201, UDOT plans, develops, constructs, and maintains "state transportation systems that are safe, reliable, environmentally sensitive, and serve the needs of the traveling public, commerce, and industry."

Early in the EIS process, relevant information regarding conditions in the study area, recent and future major road improvement projects within the study area, traffic conditions, and initial needs identified were assembled into a document entitled *Baseline Information for Establishing Purpose and Need* (URS 2003a). This document was used in the determination of purpose and need.

Public meetings were held on September 23, 24, and 25, 2003, in Sandy, Draper, Riverton, and South Jordan to present the preliminary purpose and need statement to the public. Public comments were received via public comment forms distributed at the meetings, through the project web site, and on the project information and comment telephone line. All comments received were added to the project comment database and posted on the project website.

The following goals for meeting the project purpose and need were identified through input received from the public, elected officials, and city representatives:

1. Improve mobility in the study area by providing a full transportation solution that includes:
   - Addressing the regional transportation needs;
   - Improving east-west mobility;
   - Improving access to public transportation; and
   - Including facilities for bicycles, pedestrians, and equestrians, where appropriate.
2. Support economic development in the study area by:
   - Addressing future growth;
   - Addressing local land use/planning issues;
   - Providing appropriate regional access; and
   - Maximizing economic potential.
3. Maintain, protect, and improve the quality of life within the study area by:
   - Improving access for emergency vehicles;
   - Maintaining or improving access and safety for travelers and residents; and

- Minimizing impacts to neighborhood cohesion while still meeting the mobility and economic development needs of the study area.

The following provides background information related to the purpose and need.

1.4.1 Description of Study Area

The study area is located approximately 16 miles south of the center of Salt Lake City in Salt Lake County. It encompasses portions of Draper City, Riverton City, Sandy City, and South Jordan City. All land within the study area is incorporated into one of the four cities. The area is considered suburban to Salt Lake City, with many residents commuting north to Salt Lake City to work. I-15 is the primary north-south route in the area, with Bangerter Highway, Redwood Road, State Street, and 700 East providing secondary north-south access as signalized urban arterials. The major east-west access roads within the study area, from north to south, are 10400/10600 South, portions of 11400 South, portions of 11800 South, and 12300/12600 South. Currently, only 10400/10600 South and 12300/12600 South have interchanges at I-15 within the study area, and provide the only two roadway Jordan River crossings within the study area.

WFRC's LRP includes both commuter rail and light rail service in the study area. Commuter rail will eventually extend from Brigham City in the north to Payson in the south, on tracks adjacent to the Union Pacific Railroad tracks, west of I-15. The Draper extension of the TRAX light rail line would extend from the TRAX southern terminus at 10000 South/300 East in a southeasterly direction to 12300 South/1300 East, then southwesterly to a point south of 13800 South in Draper. The Mid-Jordan light rail line would extend from the Fashion Place West station on the existing north-south TRAX line in a southwesterly direction through Midvale, West Jordan, and South Jordan, terminating near 5600 West and 11300 South.

An important feature of the study area is the Jordan River (see Figure 1-1). The Jordan River flows north approximately 44 miles from Utah Lake (near the community of Lehi) to the Great Salt Lake, and passes through 15 different municipalities. The river is on average 40 feet in width. Wetlands and riparian vegetation provide habitat for wildlife along the river through much of the river corridor (Figure 1-3).

Figure 1-3. Jordan River Wetlands at 10600 South in South Jordan City

Through a cooperative effort, a nearly continuous corridor on each side of the river has been preserved as open space known as the

Jordan River Parkway. The State Division of Parks and Recreation has jurisdiction over a 150-foot corridor on each side of the riverbank, and has authority to establish and coordinate programs for development of recreational areas, water conservation, flood control, and wildlife conservation within this corridor. A multi-use trail system is planned to eventually run the length of the river. The vision of the Jordan River Parkway Trail is to connect the Great Salt Lake and Utah Lake with a series of educational, recreational, and scenic opportunities along the way.

In the study area, the trail passes through portions of South Jordan, Draper, and Riverton. This section of the trail has been largely completed except for a section between approximately 11400 South and 11800 South. The trail system is under the jurisdiction of and coordinated by the Utah State Division of Parks and Recreation, although each municipality also has shared jurisdiction over its own segments.

Roadway bridges currently span the river in the southern Salt Lake Valley at 14600 South, Bangerter Highway (13800 South), 12300 South, 10600 South, Jordan River Boulevard (9800 South), 9000 South, and 7800 South. Of the above bridges, only the 10600 South and 12300 South bridges are within the study area.

Much of the open land currently in agriculture/grazing use and not designated as open space in each of the cities is zoned for residential or commercial uses. Full build-out is expected for each city by the end of the study period (2030). The south valley area is highly desirable for residential communities, office and retail commercial enterprises, and limited light industry.

1.4.2 Need for Mobility Improvements

UDOT is responsible for planning for growth impacts on the state transportation system. Current population growth projections indicate that the state of Utah will grow from 2.3 million in 2003 to 3.7 million residents by 2030 (WFRC 2003c). Utah's 1.6 million drivers will grow to over 2.6 million by 2030, an increase of 65 percent (UDOT 2003a). Regardless of which transportation modes may be popular in the future, there will be many more users.

Population Growth

The southern Salt Lake Valley is one of the fastest-growing areas in the state of Utah. As shown in Table 1-1, the combined population of the four cities in the study area (Draper, Riverton, Sandy, and South Jordan) is projected to increase by 90 percent from 2000 to 2030, compared to a 54 percent increase in Salt Lake County. As also shown in Table 1-1, employment in the four cities is expected to more than double by 2030. The four cities are projected to have a 126 percent increase in jobs located within city boundaries, compared to a 55 percent increase for all of Salt Lake County.

Table 1-1.
Population and Employment Projections

	Population Year 2000[1]	Projected Population 2030[2]	Percent Increase in Population	Employment Year 2000[3]	Projected Employment 2030[2]	Percent Increase in Employment
Sandy City	88,418	123,292	39%	39,260	76,695	95%
Draper City	25,220	40,072	59%	16,741	25,539	52%
Riverton City	25,011	74,963	200%	3,990	16,283	308%
South Jordan City	29,437	81,626	177%	7,287	33,270	357%
Combined Four Cities	168,086	319, 953	90%	67,278	151,787	126%
Salt Lake County	898,387	1,383,907	54%	646,003	1,002,915	55%
State of Utah	2,233,169	3,772,042	69%	1,340,104	2,217,041	65%

[1] U.S. Census 2000
[2] WFRC Socioeconomic Projections July 2001 and Governor's Office of Planning and Budget 2002 Baseline
[3].State of Utah Division of Workforce Services and Governor's Office of Planning and Budget 2002 Baseline

Travel Demand and Traffic Growth

With a large growth in population (as well as additional economic development) in the south valley area, travel demand will increase. The amount of travel that occurs in Utah continues to increase at a rate faster than the rate of population growth, as stated in UDOT's *Utah Transportation 2030 Plan* (UDOT 2003a).

This portion of the southern Salt Lake Valley has recently experienced a large increase in commercial, retail, and other types of new development. Areas of current and expected development are shown on Figure 1-7 on page 1-18. The following is a listing of major traffic generators currently in existence. These existing traffic generators were accounted for in the traffic modeling analysis.

Existing traffic generators in Draper City include:

- Numerous retail shops and restaurants along 12300 South, especially east of the interchange with I-15;
- Factory Stores of America Outlet Stores at 12100 South Factory Outlet Drive;
- New Albertson's, Home Depot and Best Buy stores at the intersection of 11400 South and State Street;
- The Skaggs Catholic Center south of 11800 South, consisting of elementary, junior high, and high schools, with a capacity of 2,700 students; and
- Commercial and retail businesses along the I-15 frontage roads and State Street.

Existing traffic generators in Sandy City include:

- The Utah Auto Mall and other retail businesses between State Street and I-15, north of 11000 South;
- The South Towne Mall, located at 10450 South State Street, and surrounding development including numerous restaurants and hotels;
- Sandy City Hall at 10000 Centennial Parkway, east of I-15;
- Costco, Home Depot, and other large retail stores between I-15 and State Street, north of 11400 South;
- Jordan Commons entertainment/restaurant complex at 9400 South and State Street (north of the study area);
- South Towne Exposition Center, at 9500 South State Street (north of the study area);
- Centennial Parkway office development, with 500,000 square feet of office space near Sandy City Hall; and
- The light rail TRAX station at the terminus of the existing light rail line at 10000 South and 300 East.

Existing traffic generators in Riverton City include:

- Existing commercial development along 12600 South, 2700 West, Redwood Road, and 1300 West; and
- Riverton High School, 12476 South 2700 West, with approximately 2,100 students.

Existing traffic generators in South Jordan City include:

- Existing office developments on Jordan Gateway and River Park Drive;
- The Salt Lake County Equestrian Center at 11400 South and 2200 West, with large vehicles and horse trailers;
- Commercial development at the intersection of 10400 South and Redwood Road;
- South Jordan City Hall at 1600 West Town Center Drive (near Redwood Road and 10400 South);
- Bingham High School at 10400 South and 2200 West, with 1,950 students; and
- The Jordan River LDS Temple, at 10500 South 1300 West.

The study of existing traffic conditions and future projected traffic conditions conducted for this FEIS shows not only existing transportation problems, but also future congestion problems that will occur if no action is taken in the 11400 South Study Area other than projects included in the WFRC LRP (Wilson & Co. 2003).

Future transportation needs are determined by using traffic models, which contain assumptions about future population, employment, housing, and jobs. The most current long range transportation demand model available is for the year 2030 (WFRC 2003c). Therefore, the traffic study prepared for this FEIS is based on the year 2030 as the future condition, and assumes that all of the projects included in the WRFC 2030 LRP will be constructed, including highway projects, light rail projects, and the proposed commuter rail project (see list of projects in Section 1.2).

Exceptions to this are the components of the previously studied 11400 South project that are currently in the WFRC LRP: An interchange at 11400 South and I-15; construction of 11400 South across the Jordan River (from 700 West to 1300 West); and widening 11400 South from Redwood Road to Bangerter Highway. These items are included in the LRP, but have been removed from the transportation demand model for this FEIS. The model assumes that construction on 12300 South has been completed (modification of interchange from a diamond interchange to a single-point urban interchange and widening of 12300/12600 South), and that 10400 South from Redwood Road to Bangerter Highway has been widened to four lanes with a center turn lane.

Traffic modeling of previous projects in the study area, including the 12300/12600 South widening from Redwood Road to 700 East, the 10600 South widening from I-15 to Redwood Road, the 10400 South widening from Redwood Road to Bangerter Highway, and the new river crossing at 9800 South, included the assumption that the previously planned 11400 South project improvements (interchange at 11400 South and I-15, connection of 11400 South across the Jordan River, and widening of 11400 South) would be completed. To handle the increased growth in the study area, 12300/12600 South and/or 10400/10600 South would likely need to be widened further if an alternative that includes widening 11400 South is not constructed.

Highway capacity is typically represented by a measure known as level of service (LOS) (Figure 1-4). LOS is related to traffic operations and safety. When acceptable levels of service are achieved on a roadway, traffic flows well and driver frustration is at a minimum. The potential for accidents related to stop-and-go conditions, bumper-to-bumper traffic, and erratic driver behavior is also reduced. Maneuverability within the traffic flow is more efficient. A low LOS along a facility commonly results in poor traffic flow, reduced maneuverability, increased driver frustration, an increased potential for traffic accidents, and an increase in air pollutants.

As shown in Figure 1-4, LOS is denoted in a range from A (best) to F (worst). For LOS categories A through C, traffic conditions are such that speeds are not impeded by other vehicles and maneuverability within the traffic stream is good. LOS D describes a traffic stream that is generally moving, but borders on a threshold in which small increases in number of vehicles may cause substantial increases in delay, decreases in speed, and breakdowns in traffic flow. LOS categories E and F typify frustrating stop-and-go conditions, significant delays, reduced travel speeds, and extensive wait times at intersections.

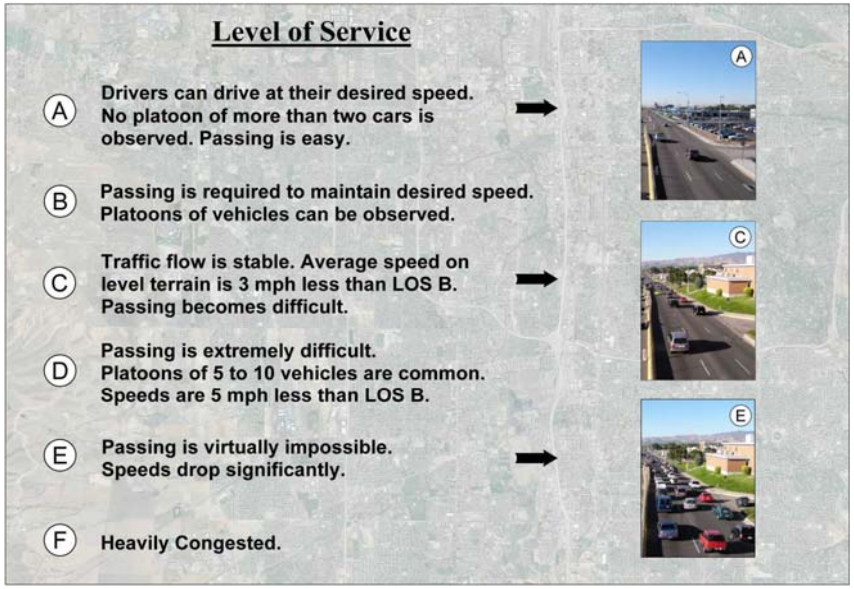


Figure 1-4. Level of Service Summary

Delay, characterized as average travel speed, is used to measure the LOS for urban signalized arterials like 10600 South and State Street. Delay is a measure of the additional travel time spent stopped or slowed as a result of prevailing traffic conditions. The baseline from which delay is measured is the travel time under free-flow traffic conditions. More delay is less desirable and results in lower LOS.

Arterial street LOS is based on the average through-vehicle (not turning) travel speed for the corridor under consideration. Average travel speed is the basic LOS measure for arterial streets and is a calculation of running times and delay of through movements at signalized intersections. The average travel speed is compared against the free-flow speed – or unrestricted travel speed. The LOS is influenced by the number of signalized intersections per mile and the delay caused by the intersections. Inappropriate

signal timing, poor progression, and increasing traffic flow can quickly degrade the LOS.

Streets with medium to high signal densities (more than two per mile) are more susceptible to these factors, and poor LOS might be observed even before significant problems occur. On the other hand, longer arterials with heavily loaded intersections can provide reasonably good LOS, although an individual intersection might be operating at a lower level.

LOS of a freeway system is represented by the level of congestion on a freeway segment. Congestion is defined by three variables including density, speed, and flow rate. The relationship between the variables is a fairly steady one: increasing flow rates yields increasing density and decreasing speed. This relationship holds true until it reaches a breaking point when the system can physically hold no more vehicles (maximum density) and the speed and the flow rate decrease sharply.

As shown in Table 1-2 and Figure 1-5, there are currently peak period congestion problems at several intersections on 10600 South, and on I-15 exit and entrance ramps at 10600 South and 12300 South. Five major intersections or interchange areas within the study area are now at or over capacity, with a LOS of E or F (based on delay times proceeding through the intersection), and 12 major intersections or interchange areas are projected to be at this level by the year 2030 (Wilson & Co 2003).

Table 1-3 and Figure 1-6 show that several roadway segments, including portions of Redwood Road, I-15, State Street, and 10600 South are currently at or over capacity (LOS E or F). By 2030, several additional segments will be at or over capacity.

Traffic on and around I-15 is part of the mobility problem within the study area. I-15 is the only north-south freeway within the study area and is also the main north-south freeway through the Salt Lake Valley and the State of Utah. As shown in the above-mentioned figures and tables, I-15 and several of its associated on- and off-ramps are currently at or over capacity.

Congestion Management System

The WFRC Congestion Management System (CMS) is a tool to support the WFRC LRP and the Transportation Improvement Program. The CMS identifies congestion reduction needs and provides information and suggestions to decision makers to meet those needs. Travel demand management (TDM) and travel system management (TSM) strategies are evaluated with the intent to resolve the congestion without increasing highway capacity if possible. The results of the CMS contribute to an efficient and effective transportation system, increased mobility, and maximized utility from limited resources (WFRC, 2002d). The current CMS demonstrates the need for additional capacity in the 11400 South study area as TSM and TDM alone have been found insufficient to meet future demand (see Appendix D, July 9, 2004 memo from WFRC).

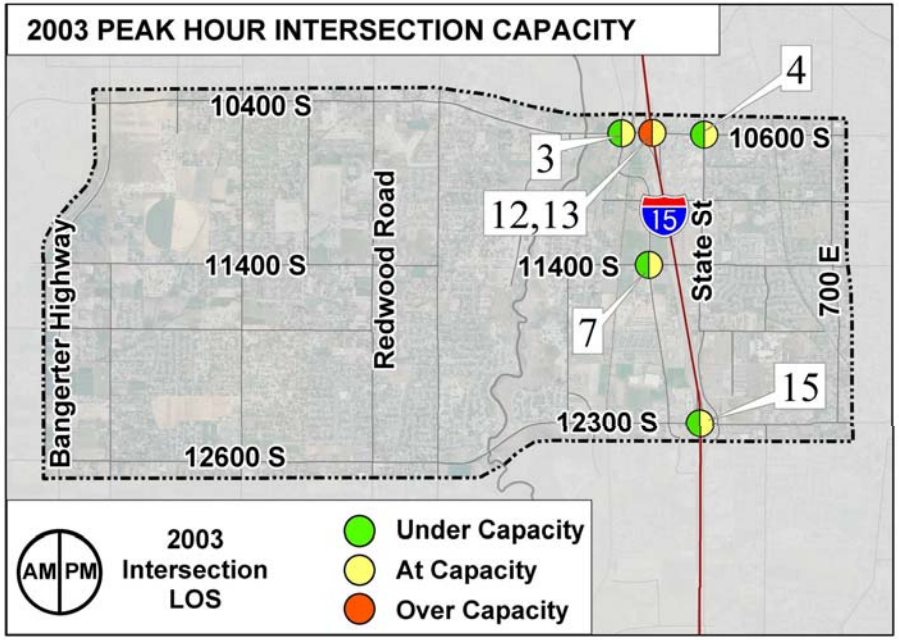
Consistent Travel Times within the Corridor

An important goal of FHWA, UDOT, and the cities involved is to improve the dependability of travel in the corridor. A roadway facility that is open to traffic and provides a consistent travel time with smoothly flowing traffic is considered to demonstrate dependable travel. 10400/10600 South and 12300/12600 South carry most of the east-west commuter traffic within the study area. Because these corridors are operating near capacity, the dependability of travel on these corridors may be impaired by activities that cause lane closures and traffic back-ups, such as traffic incidents or routine roadway or utility maintenance. Additional travel routes and/or additional roadway capacity would contribute to more dependable traffic conditions within the study area, as well as improve emergency vehicle response times.

Table 1-2.
Intersections At or Over Capacity[1]

Intersection	2003[2]	2030
1. 10400 South and Redwood Road		a.m./p.m.
2. 10400 South and 1300 West		a.m./p.m.
3. 10600 South and Jordan Gateway	p.m.	p.m.
4. 10600 South and State Street	p.m.	p.m.
5. 11400 South and 1300 West		p.m.
6. 11400 South and State Street		p.m.
7. 11400 South and Jordan Gateway	p.m.	
8. 12600 South and Bangerter Highway		a.m.
9. 12600 South and Redwood Road		a.m./p.m.
10. 12300 South and Lone Peak Parkway		a.m.
11. 12300 South and State Street		a.m.
12. I-15 Northbound entrance ramp at 10600 South (right turn only)	a.m./p.m.	a.m./p.m.
13. I-15 Southbound exit ramp at 10600 South (right turn only)	a.m./p.m.	a.m./p.m.
14. I-15 Northbound entrance ramp at 12300 South (right turn only)		a.m./p.m.
15. I-15 Northbound exit ramp at 12300 South (right turn only)	p.m.	a.m./p.m.
16. I-15 Southbound exit ramp at 12300 South (right turn only)		a.m./p.m.

[1]For this study, a.m. peak is 7:00 a.m. to 9 a.m.; p.m. peak is 4:00 p.m. to 6:00 p.m.
[2]The existing conditions analysis assumes construction on 12300/12600 South is complete and 10400 South, from Redwood Road to Bangerter Highway, has been widened to four lanes.



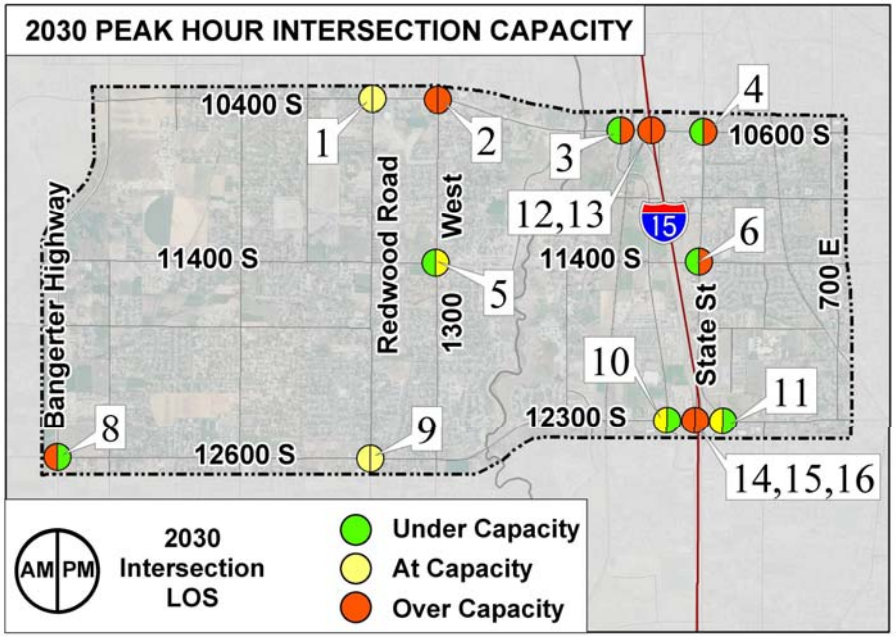
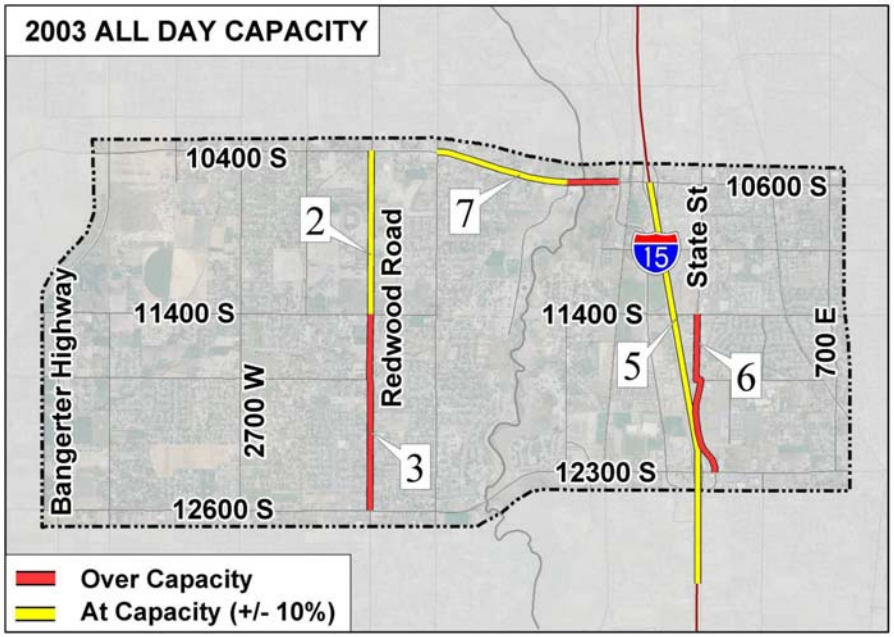


Figure 1-5. Intersections At or Over Capacity, 2003 and 2030
Source for information on this page: Wilson & Co., Existing Transportation Conditions Report, and Technical Memorandum, No-Build Alternatives Analysis for 11400 South EIS, 2003.

Table 1-3.
Roadways or Roadway Segments At or Over Capacity[1]

Roadway or Segment	2003[2]	2030
1. 2700 West, 10400 South to 12600 South		X
2. Redwood Road, 10400 South to 11400 South	X	
3. Redwood Road, 11400 South to 12600 South	X	X
4. 1300 West, 10400 South to 11400 South		X
5. I-15, 10600 South to 12300 South	X	X
6. State Street, 11400 South to 12300 South	X	
7. 10600 South, 1300 West to Jordan Gateway	X	X
8. 10600 South, Bangerter to 700 East		X
9. 12600 South, Bangerter to 700 East		X

[1]The roadway capacity analysis is based on the number of lanes and the average annual daily traffic volume in the corridor.
[2]The existing conditions analysis assumes construction on 12300/12600 South is complete and 10400 South has been widened to four lanes.



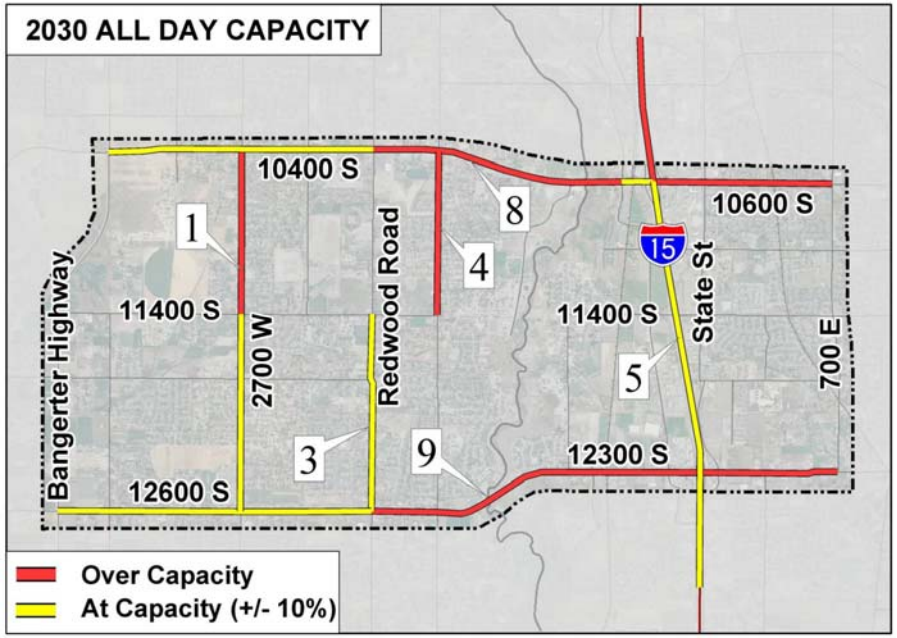


Figure 1-6. Roadway Segments At or Over Capacity, 2003 & 2030
Source for information on this page: Wilson & Co., Existing Transportation Conditions Report, and Technical Memorandum, No-Build Alternatives Analysis for 11400 South EIS, 2003.

1.4.3 Economic Development

Transportation's role in economic development can be evaluated by first understanding the role future development plays in creating and meeting local government's fiscal needs and then assessing the reliance of future development on expanded transportation capacities, networks, or systems. The transportation improvements that increase volumes result in increased visibility and access that can directly affect a business' success.

Draper, Riverton, Sandy, and South Jordan are seeking to expand their economic bases. All four cities are actively seeking new commercial and retail expansion to provide a tax base to support services for their increasing populations.

Economic development includes activities that occur within or are initiated by a local community that will increase the revenues of that community. Local government revenues are generally comprised of property taxes, sales taxes, franchise taxes (utilities), fees, and licenses/permits. According to city officials, continued economic development is necessary to provide additional employment opportunities and adequate access to goods and services for current and future residents within the study area. In addition, increased sales tax revenue is needed to allow cities to continue providing necessary public services and quality of life enhancements to the growing residential population.

Figure 1-7 shows areas of existing office/retail/commercial development in the study area, as well as planned future development, including residential. This information was obtained from city master plans and zoning plans. Information in the city master plans was incorporated into the WFRC transportation demand model used to forecast future transportation conditions for this study. Transportation alternatives that would result in improved access to areas of existing and potential development would support the economic vitality of the existing businesses as well as provide new development opportunities.

Significant planned development activities in each of the communities are described below.

Sandy City

Sandy City is located in the northeast quadrant of the study area east of I-15 and north of 11400 South. Sandy City was historically a small farming community. Sandy began developing into a bedroom community of Salt Lake City with widespread development in the 1970s. This city is mostly developed, with some undeveloped commercially zoned space at I-15 and 11400 South. Most of the recent growth is outside of the study area. The areas adjacent to I-15 are commercial, with the remainder of the study area in Sandy City mostly residential.

Sandy City anticipates growth in commercial, retail, office, industrial, and multifamily housing, mainly in the undeveloped areas along I-15. Planned future development in Sandy outside the study area, but that would generate additional traffic within the study area includes:

- Security National Development: 350 to 500 condominium units, with residential and commercial space west of 10000 South light rail station;
- Hidden Brook Estates condominiums, 400 units planned with approximately two-thirds already constructed, east of Jordan River at 9400 South;
- Pheasant Hollow commercial/retail development, approximately 51 acres, west side of I-15 at approximately 9800 South; and
- South Town Ridge and Albion Village, 300 condominium units with first floor retail, approximately 9700 South, west of State Street.

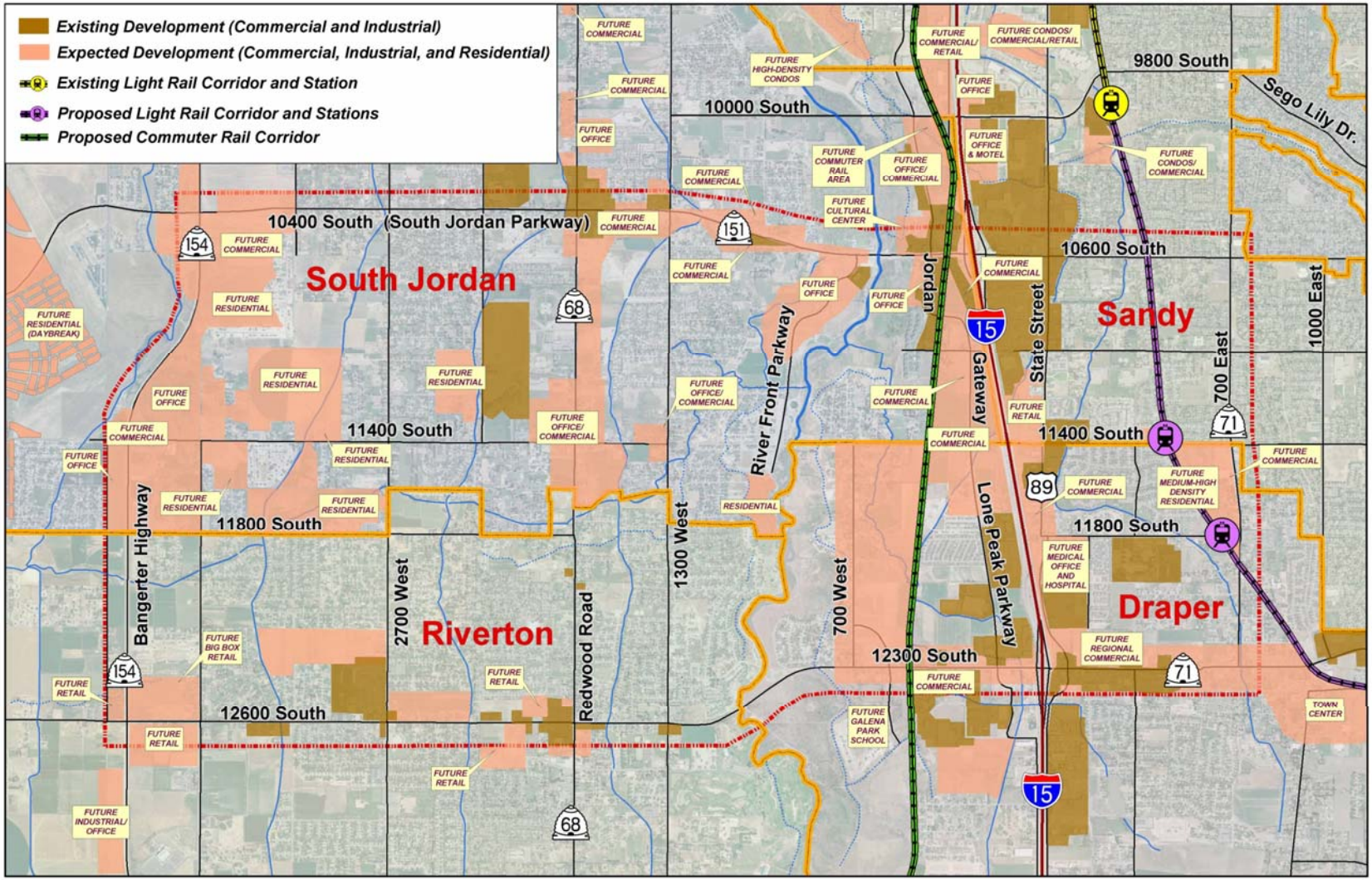


Figure 1-7. Existing Commercial and Industrial Development and Planned Future Commercial, Industrial and Residential Development

Riverton City

Riverton is located in the southwest quadrant of the study area, south of approximately 11800 South and west of the Jordan River. This city retains the most rural character of the cities in the study area, but is being rapidly developed. Future plans for development in Riverton include areas along Bangerter Highway and Redwood Road for commercial uses, and undeveloped areas along 12600 South for retail uses. Remaining undeveloped agricultural areas are zoned residential.

Planned development includes:

- Retail development at 13400 South and Bangerter Highway;
- Retail development at northwest corner of 12600 South and Bangerter Highway;
- Big box retail development at the northwest corner of 3600 West and 12600 South;
- Retail development at the northwest and southwest corners of Redwood Road and 12600 South;
- Commercial development in area north of Bangerter Highway and south of 13400 South;
- Residential development south of 13400 South at approximately 3000 West;
- Intermountain Health Care (IHC), a large health services corporation, on the southwest corner of 12600 South and Bangerter Highway; and
- Industrial/office space immediately south of 12600 South on Bangerter Highway.

Draper City

Draper is located in the southeast quadrant of the study area between the Jordan River and 700 East, and south of 11400 South. Draper was historically a small agricultural community. It retained its rural character until major residential development began occurring in the 1990s. The portion of the study area within Draper is characterized by undeveloped and agricultural areas interspersed with residential subdivisions and businesses, mostly retail.

Most of the recent growth has been mainly south and east of the study area. Much of the commercial development within the study area is concentrated along I-15, State Street/Factory Outlet Drive, 700 East, 12300 South, and 11400 South. A new commercial/ mixed use area is currently being developed between 11400 South and 11800 South between the Union Pacific Railroad (UPRR) tracks, west of I-15, and State Street, east of I-15, as part of the Draper City Northern Gateway Plan. Lone Peak Parkway extends south through this area, as an extension of the Jordan Gateway north of 11400 South in South Jordan. Development along Lone Peak Parkway, 11400 South, and State Street is expected to accelerate as more residents move into the city. Regional retail development is planned at 11400 South and Lone Peak Parkway.

The city plans to keep the floodplain area east of the Jordan River as open space/parkland as part of the Jordan River Parkway.

Draper City expects new commercial development along I-15, State Street/Factory Outlet Drive, 700 East, 12300 South, and 11400 South. Future development on Lone Peak Parkway is also expected to generate additional traffic within the study area. Planned development includes:

- Future St. Mark's Hospital, approximately 150 beds plus a brain trauma center and professional office space, southeast corner of 11800 South State Street;
- Medium- to high-density residential development of 200 to 300 units south of 11400 South along 700 East, to include commercial development along 700 East; and
- Regional commercial development at 12300 South on the north side of the road, west of 300 East (this is currently underway and nearing completion).

South Jordan City

South Jordan City is located in the northwest quadrant of the study area west of I-15 and north of the Riverton border at approximately 11800 South. Most of this area is developed, except for some large tracts on Bangerter Highway (west of 2700 West), Jordan Gateway, Redwood Road, and River Front Parkway. Most of the interior undeveloped sites are planned for residential subdivisions. Along Bangerter Highway, Redwood Road, and River Front Parkway are areas zoned for commercial/ office. Planned development includes:

- A new South Jordan community cultural center north of 10600 South at Jordan Gateway;
- A Wal-Mart at the northwest corner of Jordan Gateway and 11400 South. Construction is expected to begin in Spring 2005. The company that is developing the Wal-Mart has indicated that if an I-15 interchange at 11400 South is built, a Sam's Club will also be developed at the same location;
- A 100+ acre mixed-use development with residential units at 11400 South and Bangerter Highway. Development is expected to start in early 2005;
- A new strip mall at the southeast corner of River Front Parkway and 10600 South;
- A 20-acre mixed used development at the southwest corner of Jordan Gateway and 10600 South. Construction is expected to begin within six to twelve months; and
- The Sterling Village residential development on Jordan Gateway is expected to construct an additional 600 residential units beginning in the spring of 2005.

South Jordan plans to retain the area along both sides of the Jordan River as open space/parkland as part of the Jordan River Parkway.

The Daybreak Community, west of the study area, is planned on 4,127 acres of vacant land owned by Kennecott Land Development Company (Figure 1-8). The development, which broke ground in 2004, is expected to ultimately house a residential population of 30,000 in 13,667 units, and provide 15,000 retail office and industrial jobs in 9.1 million square feet of retail, office, and industrial space. An initial 300 homes were planned for construction in 2004, with complete build-out anticipated by 2019. A light rail line extending to the Daybreak development is included in the WFRC Long-Range Plan. Although Daybreak is just outside the 11400 South FEIS study area, it will generate additional traffic throughout the study area and has been considered in the traffic forecasting, as have other planned developments included in the city master plans.

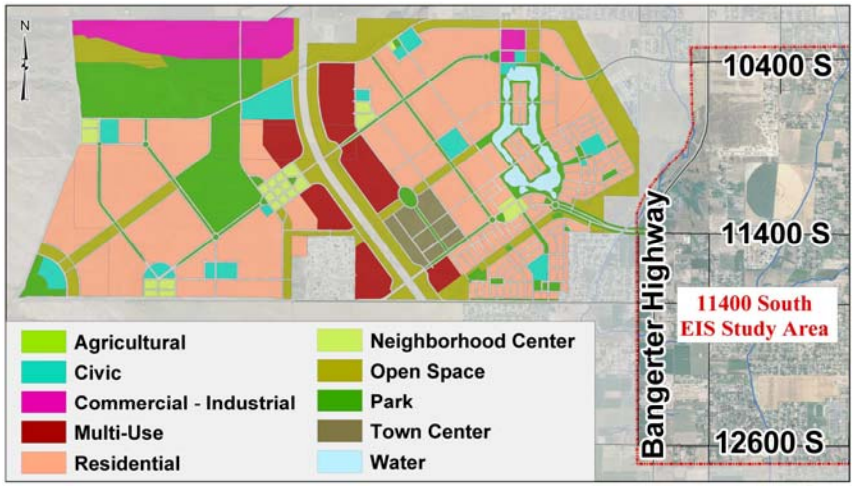


Figure 1-8. Planned Daybreak Development West of Study Area

1.4.4 Context Sensitive Solutions/Public Input

UDOT and FHWA have integrated the principles of Context Sensitive Solutions (CSS) into all projects. CSS involves open, honest, early, and continuous communication with the interested public, with a goal of assuring a project is in harmony with the community, and that it preserves environmental, scenic, aesthetic, historic, and natural resource values of an area. In order to achieve these goals, a public involvement process is tailored to each project.

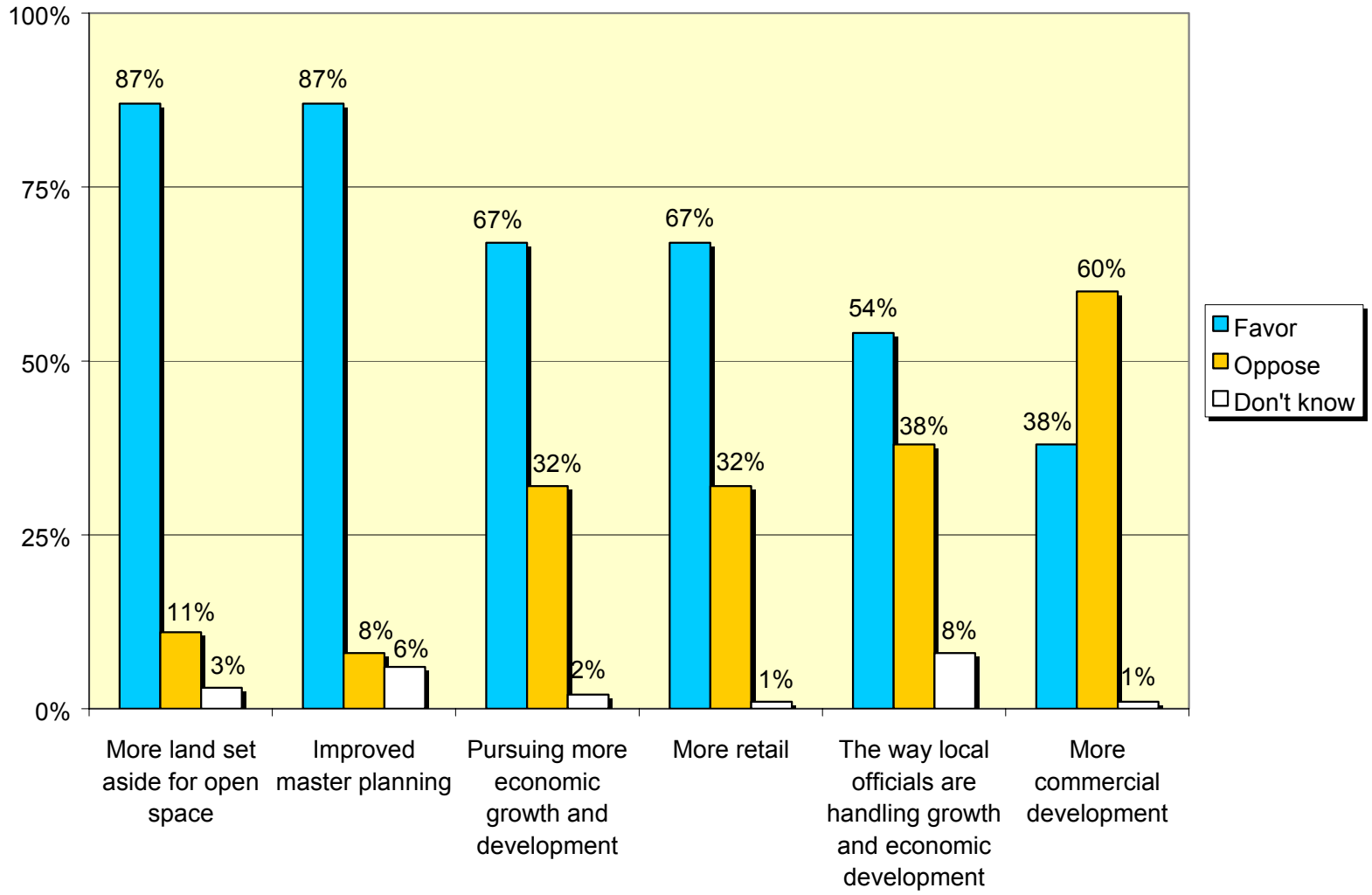
For this project, information was gathered from the public to determine their perceptions of transportation needs in the 11400 South FEIS study area, as well as to understand the resource values of the communities. Various methods were used to obtain information, including meetings with city officials, public open houses, presentations at neighborhood meetings and City Council meetings, a telephone survey, a project Web site with a comment form, focus groups, and a community input group.

Information gathered from a 1,000-person telephone survey of the 11,000 residents of the study area (Figure 1-9) indicates that although 87 percent of those responding favor more land set aside for open space, respondents also favor pursuing more economic growth and development.

The type of growth was important, with 67 percent favoring more retail development (such as stores and restaurants) in the study area, but only 38 percent favoring more commercial development (such as manufacturing and other businesses). In addition, traffic congestion was cited as the major transportation problem in the study area (52 percent). Ability to travel in an east or west direction within the entire study area was also cited as a major problem by 48 percent of those responding. These are only a few of the survey questions. A copy of the complete telephone survey, results, and methods, as well as other public input that was used in determining the Purpose and Need, is included in Appendix B of this FEIS. The sample was drawn according to the population in the study area and has a margin of error of ±3.0 percent for total data.

A community input group, called the Transportation Ideas Exchange (TIE), was formed early in the EIS process. Members were selected from a pool of interested citizens who attended the public scoping meetings in September 2003 and expressed interest in serving on the TIE.

TIE meetings were held approximately every month beginning in October 2003. TIE members provided input on the project purpose and need, alternatives to be carried forward, analysis of alternatives, and method of presenting information at the public open house meetings. Additional information on these public involvement activities is found in Section 6 of this FEIS, Comments and Coordination.



Note: In the survey, "Retail" referred to development such as stores and restaurants. "Commercial" referred to development such as manufacturing

Figure 1-9. Telephone Survey Results Regarding Residents' Desires for Future Development in Their Communities

1.4.5 Input from Cities

A meeting with the mayors of the four directly affected cities was held in July 2003. Also attending were state representatives and the area's Transportation Commissioner. At the meeting, a list of transportation issues in the area was compiled, including congestion, poor traffic flow, difficult east-west travel, too much construction, and other issues. According to city officials, continued economic development is necessary to provide additional employment and adequate access to goods and services for current and future residents within the study area. In addition, increased sales tax revenue is needed to allow cities to continue providing necessary public services and quality of life enhancements to the growing residential population.

1.5 Purpose and Need Summary

The compilation of baseline information on future population growth in the south valley area, future travel demand and traffic growth, and planned economic development, as well as public perceptions and opinions (based on comments received as a result of the above public involvement activities), reveals that there are existing and projected future transportation problems in the study area, and that there is a need for transportation improvements.

Maintaining the current quality of life is important to city officials and the residents within the study area. The purpose of this project is to maintain, protect, and improve the quality of life in the study area by **improving mobility** and providing transportation infrastructure to **support economic development** within the study area through the year 2030.

Mobility within the study area needs to be improved. The southern Salt Lake Valley is one of the fastest growing areas in the state of Utah. The combined population of the four cities represented in the study area (Draper, Riverton, Sandy, and South Jordan) is projected to increase by 90 percent from 2000 to 2030, compared to a 54 percent increase in Salt Lake County. All four cities anticipate significant growth in commercial, retail, office, industrial, and residential within the next few years. With a large growth in population (as well as additional economic development) in the south valley area, travel demand will increase. As shown previously in Section 1.4.2, several roadway segments, including portions of Redwood Road, I-15, State Street, and 10600 South are currently at or over capacity (LOS E or F), and many additional roadway segments will be at or over capacity by 2030.

In addition, the travel on corridors in the study area operating near capacity may be impaired by common activities that cause lane closures and traffic back-ups, such as traffic incidents or routine roadway or utility maintenance. Mobility improvements that maintain travel corridors at levels at or below capacity, such as alternate travel routes or additional roadway capacity, would contribute to more dependable traffic conditions within the study area, as well as improve emergency vehicle response times.

In order to meet the project purpose and need for improving mobility within the study area, a proposed alternative must reduce travel times within the study area over the No Build Alternative. In addition, a proposed alternative should reduce the number of intersections at or over capacity within the study area in the design year over the 2030 No Build conditions. Improvements to mobility on I-15 through the study area would also contribute to meeting the project purpose and need.

Economic development within the study area needs to continue in order for cities to maintain the quality of life their residents desire. Draper, Riverton, Sandy, and South Jordan are actively seeking new commercial and retail expansion to provide a tax base to support services for their increasing populations. This economic development includes both business and residential development.

According to city officials, continued economic development is necessary to provide additional employment opportunities and adequate access to goods and services for current and future residents within the study area. In addition, increased sales tax revenue is needed to allow cities to continue providing necessary public services and quality of life enhancements to the growing residential population. Therefore, developing a transportation infrastructure that supports this economic development without compromising mobility is included as a part of the project purpose and need.

A proposed alternative can be shown to meet the project purpose and need for supporting economic development if it can be demonstrated that it will support retail development and that it will contribute to additional sales tax revenues over the No Build Alternative. Increasing access and mobility will increase the number of new businesses and regional square feet of retail space available. An economic analysis of all the alternatives advanced in this FEIS was conducted and the results are included in Appendix F and summarized in Section 4.4.